

Marine Bioacoustics: Back to the Future

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Award Number: N00014-08-1-0359

LONG-TERM GOALS

The primary goal of our project is to provide advanced undergraduates, graduate students, and postdoctoral investigators with a broad understanding of ocean acoustics as well as the techniques used to study the ecology of marine animals *in situ*. By bringing together many of the top researchers in marine bioacoustics, biological oceanography, and marine biology, we provide students with a unique opportunity to work side by side with world experts using state-of-the-art tools and technologies. A secondary goal of the project is to provide a setting for developing and testing new technologies. In this manner, it serves as a research magnet, attracting leading scientists to conduct their own research in a creative teaching and learning environment that catalyzes interactions across the various disciplines associated with Bioacoustical Oceanography.

OBJECTIVE

To provide students with a broad understanding of the acoustic techniques used to study the distribution and behavior of marine animals in the context of their physical/chemical/biological environment.

APPROACH

Through lectures, demonstrations, and field exercises, we provide students with a unique opportunity to learn and work side by side with top scientists using state-of-the-art bioacoustic tools and techniques.

WORK COMPLETED

Nine undergraduate students were trained in an intensive, 3-week course in Conservation Oceanography offered on the Big Island of Hawaii during Winter 2010. Two of the weeks focused on the use of acoustic methods in studying the conservation biology of exploited fish stocks and endangered cetacean and sea turtle populations.

Report Documentation Page			Form Approved OMB No. 0704-0188		
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 2010	2. REPORT TYPE		3. DATES COVERED 00-00-2010 to 00-00-2010		
4. TITLE AND SUBTITLE Marine Bioacoustics: Back to the Future			5a. CONTRACT NUMBER		
			5b. GRANT NUMBER		
			5c. PROGRAM ELEMENT NUMBER		
6. AUTHOR(S)			5d. PROJECT NUMBER		
			5e. TASK NUMBER		
			5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Kohala Center,P.O. Box 437462,Kamuela,HI,96743			8. PERFORMING ORGANIZATION REPORT NUMBER		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSOR/MONITOR'S ACRONYM(S)		
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)		
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 3	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			



Figure 1: Drs. Adam Frankel (left) and Charles Greene (right) lead field exercise on acoustic tracking of humpback whales.

RESULTS

Highlights of student experiences include:

1. Setting up an acoustic listening station and conducting real-time acoustic tracking studies (Figure 1),
2. Learning how to use spectrograms for classifying underwater sounds,
3. Learning how to use acoustic localization and tracking software,

IMPACT

Students from around the world come to these courses because they provide the best training available in Marine Bioacoustics. Student participants in this year's course bring our total number of students since 1993 up to 214 students from 28 different countries. Our courses have acted as research magnets, attracting top scientists to integrate their own research with our educational program. Alumni from our courses have become national and international leaders in the fields of Marine Bioacoustics and Bioacoustical Oceanography.

RELATED PROJECTS

None